

A m e n d e d P a t e n t C l a i m s

1 1. (original) A device for need-controlled modulation
2 of physiological and/or pathological neuronal rhythmic activity,
3 comprising a control unit (4), a stimulator (1) and at least one
4 means for detecting brain activity (2) which is connected with the
5 control unit (4).

1 2. (original) The device according to claim 1,
2 characterized in that the stimulator (1) is at least one component
3 from the group comprising a display screen, a pair of shutter-
4 equipped eyeglasses, a loud speaker, headphones, a pressure
5 generator and a time-modulated laser.

1 3. (currently amended) The device according to claim 1
2 ~~or 2~~, characterized in that the means for detecting brain activity
3 is at least one component from the group comprised of a scalp EEG
4 electrode or a MEG electrode.

1 4. (currently amended) The device according to ~~one of~~
2 ~~claims 1 to 3~~ claim 1, characterized in that the means for
3 detecting brain activity is connected with the control unit (4) by
4 an isolating amplifier (3).

5 5. (currently amended) The device according to ~~one of~~
6 ~~claims 1 to 4~~ claim 1, characterized in that it comprises a means
7 for feedback of a patient reaction (5) which is connected to the
8 control unit (4).

1 6. (currently amended) The device according to ~~one of~~
2 ~~claims 1 to 4~~ claim 1, characterized in that it comprises means for
3 evoking a maximum physiological and/or pathological brain activity.

1 7. (original) The device according to claim 6,
2 characterized in that it comprises means for carrying out a
3 frequency scan.

1 8. (currently amended) The device according to ~~one of~~
2 ~~claims 1 to 7~~ claim 1, characterized in that it comprises means for
3 quantifying the neuronal activity.

1 9. (original) The device according to claim 8,
2 characterized in that the means for quantifying the neuronal
3 activity is a means for quantifying the amplitude of the power
4 spectrum over the excitation frequency range or a means for
5 quantifying the instantaneous amplitude of the frequency range as
6 determined by the Hilbert transformation.

1 10. (currently amended) The device according to ~~one of~~
2 ~~claims 1 to 9~~ claim 1, characterized in that the control unit (4)
3 is joined with a means for actuating the stimulator (1).

1 11. (currently amended) The device according to ~~one of~~
2 ~~claims 1 to 10~~ claim 1, characterized in that it includes means for
3 investigating the signals measured by the sensor (2).

1 12. (original) The device according to claim 11 wherein
2 the means for investigating the signals measured by the sensor (2)
3 carries out a Fourier transformation or a wavelet analysis.

1 13. (currently amended) The device according to ~~claims~~
2 ~~11 or 12~~, characterized in that it comprises means for registering
3 the change in the amplitude of the rhythm to be excited.

1 14. (currently amended)) The device according to ~~one of~~
2 ~~claims 1 to 13~~ claim 1, characterized in that it comprises means
3 for carrying out an entrainment.

1 15. (currently amended) The device according to ~~one of~~
2 ~~claims 1 to 14~~ claim 1, characterized in that it comprises means
3 for desynchronization.

1 16. (currently amended) The device according to ~~one of~~
2 ~~claims 1 to 15~~ claim 1, characterized in that it comprises means
3 for testing the quality of the entrainment.

4 17. (original) The device according to claim 16,
5 characterized in that the means for testing the quality of the
6 entrainment comprises a means for determining the phase or the
7 phase and the amplitude of the neuronal rhythm to be
8 desynchronized.

1 18. (original) The device according to claim 17,
2 characterized in that the means for determining the phase and
3 amplitude of the neuronal rhythm to be desynchronized carries out a
4 Hilbert transformation or a matching of the signals of the neuronal
5 rhythm with a slowly changing sine function in a sliding time
6 window.

1 19. (currently amended) The device according to ~~one of~~
2 ~~claims 1 to 18~~ claim 1, characterized in that it comprises means
3 for evaluating the phase and amplitude of the neuronal activity.

1 20. (original) The device according to claim 19,
2 characterized in that the means for evaluating the phase and
3 amplitude of the neuronal rhythm contains a means for calculating
4 phase resetting curves.

5 21. (original) The device according to claim 20,
6 characterized in that it comprises means for visualization (6) of
7 the phase resetting curves.

1 22. (currently amended) The device according to ~~claims~~
2 ~~20 or 21~~ claim 20, characterized in that it comprises means for the
quantitative characterization of the phase resetting curves.

1 23. (original) The device according to claim 19,
2 characterized in that the means for determining the amplitude is a
3 means by which the amplitude resetting curves are effected.

1 24. (currently amended) The device according to ~~one of~~
2 ~~claims 1 to 23~~ claim 1, characterized in that it comprises means
3 for determining the vulnerable phase of the neuronal rhythm.

1 25. (original) The device according to claim 24,
2 characterized in that the means for determining the vulnerable
3 phase is a means for varying the time spacing between the last
4 excitation of the entrainment and the desynchronizing excitation
5 signal.

1 26. (original) The device according to claim 25,
2 characterized in that the means for varying the time spacing
3 between the last excitation of the entrainment and the

4 desynchronizing is a means which effects a variation in the time
5 spacing for different values of the intensity.

6 27. (currently amended) The device according to ~~claims~~
7 ~~25 or 26~~ claim 25, characterized in that the means for varying
8 the intensity is a means for increasing the intensity in
9 equidistant steps.

1 28. The device according to ~~one of claims 24 to 27~~ claim
2 24, characterized in that it includes a means which enables from a
3 series of test stimulations optimal stimulation parameters to be
4 determined.

5 29. (original) The device according to claim 28,
6 characterized in that it includes means which detects stimulation
7 parameters from a series of test stimulations from which a
8 minimization of the amplitude of the neuronal activity to be
9 desynchronized can be obtained.

1 30. (original) The device according to claim 29,
2 characterized in that the means for determining the minimization of
3 the amplitude of the stimulation parameters which give rise to a
4 desynchronization of the rhythm comprises a means for carrying out
5 the Hilbert transformation.

1 31. (currently amended) The device according to claim
2 ~~29 or 30~~, characterized in that the means for determining the
3 minimization of the amplitude of the stimulation parameters giving
4 rise to a desynchronization of the rhythm comprises a means for
5 matching a slowly changing sine function to a signal of the sensor
6 (2) in a time window following stimulation.

1 32. (currently amended) The device according to ~~one of~~
2 ~~claims 29 to 31~~ claim 29, characterized in that the means for
3 determining the stimulation parameters giving rise to a
4 minimization of the amplitude of the desynchronizing rhythm
5 comprises a means for integrating the amplitude of the power
6 spectrum over the frequency band of signals measured by the sensor
7 (2) in a time window following the stimulation.

1 33. (currently amended) The device according to ~~one of~~
2 ~~claims 20 to 32~~ claim 20, characterized in that it comprises means
3 for increasing the intensity in non-equidistant steps.

1 34. (currently amended) The device according to ~~one of~~
2 ~~claims 20 to 33~~ claim 20, characterized in that it comprises a
3 means for evaluating phase resetting curves with which the effect
4 of the desynchronizing excitation pulse on the phase dynamics of
5 the desynchronizing neuronal activity is investigated.

1 35. (original) The device according to claim 34,
2 characterized in that the means for evaluating the phase resetting
3 curves comprises a means for applying ϕ_s , the phase of the neuronal
4 activity before stimulation, over ϕ_b , the phase of the neuronal
5 activity after stimulation.

1 36. (currently amended) The device according to ~~claims~~
2 ~~34 or 35~~ claim 34, characterized in that the means for evaluating
3 the phase resetting curves comprises a means for determining the
4 position of the phase resetting curve at which the transition from
5 a main rise 1 to a main rise 0.

1 37. (currently amended) The device according to ~~one of~~
2 ~~claims 1 to 36~~ claim 1, characterized in that it includes a means
3 for monitoring the stimulation (6).

Atty's 23158

Pat. App. Not known - US phase of PCT/DE2003/002250

This preliminary amendment is submitted to eliminate multiple claim dependency and to provide the cross reference of the present US phase of PCT application PCT/DE2003/002250 to the international application according to Rule 78.

Respectfully submitted,
The Firm of Karl F. Ross P.C.



By: Herbert Dubno, Reg. No. 19,752
Attorney for Applicant

12 January 2005
5676 Riverdale Avenue Box 900
Bronx, NY 10471-0900
Cust. No.: 535
Tel: (718) 884-6600
Fax: (718) 601-1099

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